

VIRGINIA WILDLIFE

JUNE 2003

TWO DOLLARS





Director's Column

William L. Woodfin, Jr



Lee Walker

For many of you who have come to love *Virginia Wildlife* magazine, the name Carl "Spike" Knuth has become synonymous with hundreds of articles and original illustrations about Virginia's wildlife and the places, and people who have shaped the states incredible outdoor heritage.

But, most may know him best for his artistic talents that have brought to life the pages of *Virginia Wildlife*. After almost 30 years of writing, picture taking and painting his way through the Old Dominion, Spike Knuth is officially hanging out the sign on his office door that reads, "I'll be out of the office enjoying the outdoors."

Retirement is something that most people work for all their life, but as Spike puts it "it simply means I'll have more time to write and paint." For a person who literally has not had a day go by in the last 50 years where he didn't have his pen and paintbrush in hand, it's hard to believe that he still has the drive and enthusiasm to continue showcasing all the wonderful natural resources that abound in the state. But, for those who know Spike, this is nothing new coming from an individual who grew up around the lakes and marshes of southeastern Wisconsin and began hunting and fishing at the age of seven. Spike says he quickly became fascinated with the natural world around him and found that he had a burning desire to become a wildlife illustrator, thanks in part to a movie called "Whispering Wings" produced by Ducks Unlimited in the 1950s. It was the sight and sounds of waterfowl that sparked a passion to paint birds and especially ducks in their natural habitat that helped his professional career take flight.

Since that time Spike has illustrated over 80 covers and thousands of indi-

vidual pictures for a variety of publications. He has three state duck stamps to his credit and has donated over 500 original paintings to Ducks Unlimited. He contributes much of his success as a wildlife artist to the fact that he has continued to study and learn as much as he can about our natural surroundings, so that his illustrations and paintings could be more accurate.

I might add that along the way Spike has also managed to share his love of the outdoors by helping to host and co-produce over 300 television programs, hours and hours of radio programs and shared his knowledge about the outdoors to hundreds of thousands of individuals through articles that have appeared in newspapers around the state. Ask what his biggest accomplishment has been in his long career and Spike will tell you it has been sharing his love of the outdoors with his wife Susie and his two sons, Barry and Matt.

Goodbyes are always hard to do, but Spike has assured me, and all of those who have come to enjoy his contributions in *Virginia Wildlife*, that as long as he can pick up a paint brush or pen that he will always continue to help promote Virginia's rich outdoor heritage and to try to educate people on the importance of protecting our natural resources. We certainly wish him and his family the very best in this next stage of a truly remarkable career of bringing the outdoors a little closer to each of us.



Lee Walker

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About the cover: The Smith River, below Philpott Dam, has long been considered one of the best tailwater trout streams in Virginia. Anglers often find themselves surrounded in a blanket of fog as the cold water from the river mixes with warm air. ©Dwight Dyke

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by Bruce Ingram

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Dedicated to the Conservation of Virginia's Wildlife and Natural Resources

Angling for Western Big Three

by Bruce Ingram

Three recent fishing trips of mine stand out not because they produced trophy bass, citation trout, or overgrown stripers, but because they engendered plenty of piscatorial pleasure of the panfish kind. On the upper James, my son Mark and I enjoyed a voyage where every eddy seemed to yield a rock bass to my delighted offspring. A week later on the South Fork of the Shenandoah River, the hardest striking fish of the day was a large redbreast sunfish that smashed a 3-inch long topwater plug, then looped the bait twice around a rock. And on a Botetourt County farm pond, I spent a relaxing day flyfishing with poppers for willing bluegills that later served as the main ingredient for dinner.

Rock bass, bluegill and redbreast are three of the 11 species of sunfish found in Virginia. These fun to catch and feisty fighters offer plenty of angling action, and are a great sport for all ages.

Bud LaRoche, a regional fisheries manager for the Virginia Department of Game and Inland Fisheries lists the rock bass, redbreast sunfish and bluegill sunfish as the three most popular and widespread sunfish in Western Virginia. Following is some interesting biological information on the region's big three, where to go in the western reaches of the Old Dominion to catch them, and some how-to tips.

Habitat Requirements

Rock bass (*Ambloplites rupestris*) hold the title as the panfish with the most colorful nicknames. This sunfish is known variously as a redeye, black perch, rock sunfish and my favorite—goggle-eye. As several of these monikers intimate, the rock bass possesses large eyes of a crimson nature with the second most diagnostic feature being its dark olive sides. Rock bass also possess large mouths, which extend beyond the eyes and dark blotches on the gill flaps. A similar species in Virginia is the Roanoke bass, which typically grows much larger in size and is largely restricted to the Roanoke River drainage. The rock bass has six spines in the anal fin whereas the Roanoke bass has three.

A young angler proudly displays a rock bass that was caught while wading the James River in Botetourt County.



©Bruce Ingram

Western Virginia's Sunfish

"Normally, anglers will find rock bass in streams that have cobble, boulders and faster flowing water, like the James, New, Rappahannock and South Fork of the Shenandoah," says LaRoche. "Rock bass typically feed in the main current, but they will also move to the shoreline and hide around boulders and submerged logs. This is especially true on rivers like the James where rock bass will hide along the banks to avoid flathead catfish, which are their major predator. Rarely will anglers find rock bass in deep, slow moving pools.

"Rock bass have been making a comeback on the James because flathead catfish numbers have recently decreased. Fishermen have just been wearing out those big flatheads and



Redbreast

A small spinner bait and ultra-light spinning tackle is a perfect combination for catching redbreast sunfish (above) and bluegill (left). Illustration by Spike Knuth.

keeping a number of them. Fewer flatheads means more rock bass."

Redbreast sunfish (*Lepomis aurochus*) also sport some interesting nicknames, among them the yellowbelly and sun perch. Redbreasts are characterized by their yellow bellies and lower sides (red during the breeding season, the males especially flaunt a

crimson shade), long black gill flaps, small mouths, and turquoise-colored streaks across the cheeks.

"Redbreast sunfish are found in the same western Virginia streams as the rock bass, but they are not likely to be found in the same places," says LaRoche. "Redbreasts prefer different habitat niches such as deep pools, shaded shorelines and the fringes of water willow beds. And while rock bass, especially after they grow larger in size, consume a lot of





©Bruce Ingram

Above: The South Fork of the Shenandoah River is a marvelous redbreast sunfish stream and holds excellent populations. Below: Of all the sunfish species none may be as popular to catch and eat as the bluegill.

minnows; redbreasts are more likely to prey upon stoneflies, mayflies and various other aquatic insects. Redbreasts also will often cruise shorelines as they search for beetles, grasshoppers, crickets and other terrestrials."

Department fisheries biologist Joe Williams agrees with LaRoche that flatheads can severely impact the rock bass

population and notes that this member of the catfish clan can similarly decimate redbreast sunfish numbers. But the same cannot be said for muskies.

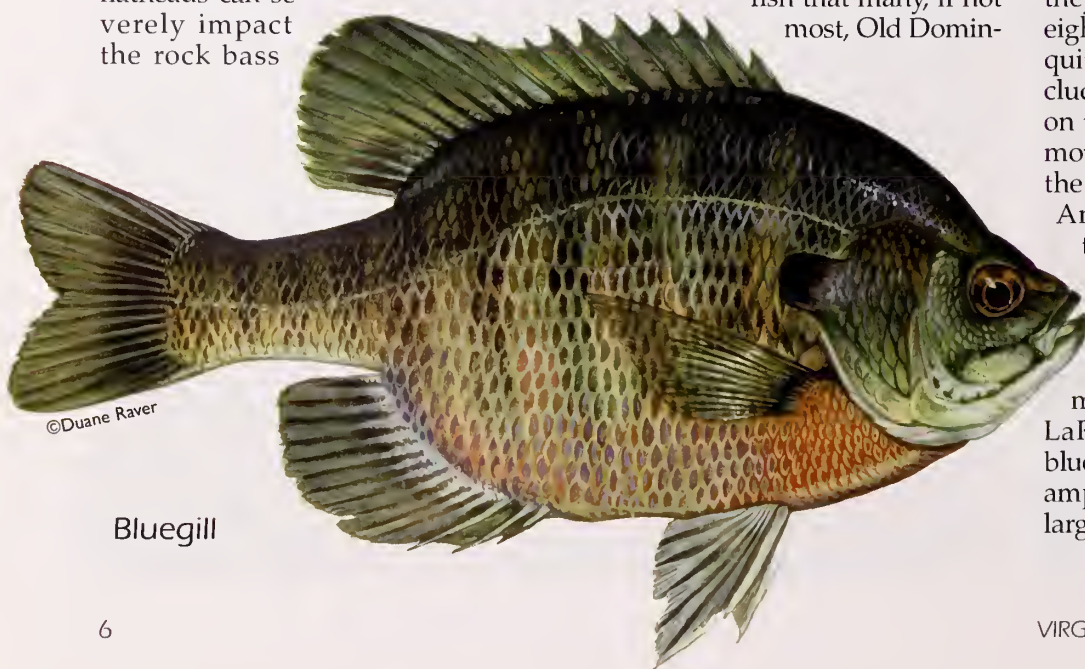
"The Department is doing a muskie study on the New River and the preliminary data indicates that shiners are the major food for one- to two-year-old muskies and that the bigger fish eat mainly suckers," says Williams. "From what we know so far from the preliminary data, I would not classify the muskie as a major or minor predator of rock bass and redbreasts."

Chances are that the first gamefish that many, if not most, Old Domin-

ion anglers caught was the bluegill sunfish (*Lepomis macrochirus*). This panfish's bynames include blue sunfish, copperbelly, and bream or brim. Frankly, the nicknames bream and brim are real sore spots for me. True bream live in European lakes and can weigh up to 15 pounds with a nice fish running 3 pounds. When someone tells me that they caught some really large bream, I ask how many of them were over 10 pounds and then explain what real bream are.

Bluegills often vary a great deal in their coloration. Gills can sport hues from dark blue to light yellow, but they almost always possess six to eight irregular vertical bars that are quite visible. Often defining traits include black gill flaps, a dark blotch on the rear of dorsal fins, and small mouths that do not extend beyond the eye. Unlike European bream, American bluegills infrequently top a pound; a 9-inch fish is a very nice specimen indeed.

"In Virginia, bluegills are real bug eaters with aquatic and terrestrial insects being a major part of their diet," says LaRoche. "Occasionally, though, bluegills will consume fish. For example, at Leesville Lake, I have seen large bluegills congregate above the



Bluegill

turbines at the dam and wait for shad to approach. Then just before the shad are sucked in, the bluegills will rush out and attack. Generally, though, bluegills prefer the still water sections of the state's lakes and ponds. Docks and backwaters are great places to fish for them."

Where to Go

As Bud LaRoche noted earlier, the upper James and Rappahannock above their respective fall lines, the entire length of the New, and the South Fork of the Shenandoah all harbor goggle-eyes. Christian Goebel, who operates Shenandoah River Outfitters in Luray, says that for some reason the South Fork seems to contain many more rock bass above the Bixlers Ferry Bridge

large redbreast will measure 9 inches, but most of them will run 5 or 6 inches.

LaRoche relates that bluegills can sometimes be found in the state's upland rivers, specifically those sections above power dams. But the state's lakes and ponds are where copperbellies thrive.

"Leesville is one of the best lakes for big bluegills because the water levels fluctuate so much that the fish don't typically produce large year classes," he says. "Typically, the fewer bluegills there are, the larger they grow. That's the problem with bluegills on Smith Mountain, for example. There are so many of them that many of the fish are only 5 or 6 inches long. Of course, all of western Virginia's other major lakes (Moomaw, Philpott, Claytor and Holston) contain bluegills.

"But the region's farm ponds is where fishermen will typically catch the biggest bluegills. That's where to go to find 8- to 9-inch and even larger bluegills."

Angling Tips

On our recent float down the upper James, my son Mark caught his redeyes on a Cordell Big O crankbait. Similar small crankbaits, those that measure under 2 inches, are just a few of the lures that will bewitch rock sunfish and yellowbellies.

"On the South Fork of the



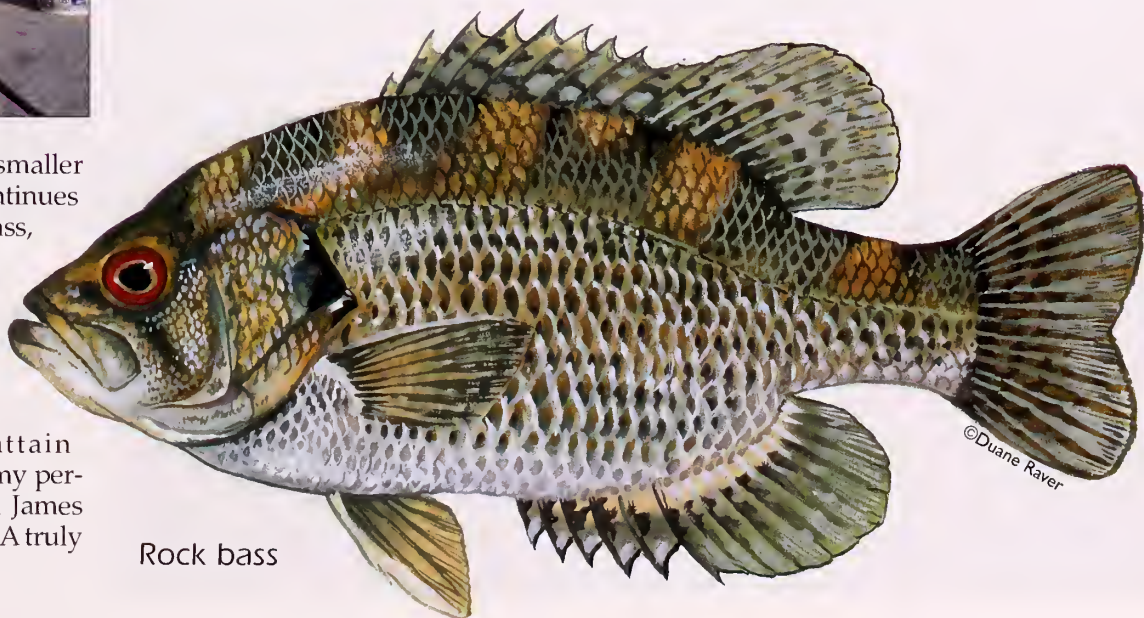
Whether it's from the shoreline or in a boat, wetting a line for bluegill, redbreast sunfish or rock bass (below) is a great way to introduce a youngster to the enjoyment of fishing.

Shenandoah, my kids love to fish small minnow plugs for rock bass and sunfish," says Goebel. "Those plugs that can be twitched on the surface and then when retrieved run about 6 inches under the top are especially effective. But if I had to pick just one lure for both of these gamefish, it would be an inline spinner. Both rock bass and redbreasts can't seem to leave a spinner alone."



than below it. Many of the smaller rivers in western Virginia, continues LaRoche, also contain rock bass, among them the Maury, Roanoke, Rapidan and North Fork of the Holston, just to name a few. Redbreast sunfish also frequent the same streams.

Rock bass typically attain lengths of 6 to 7 inches, and my personal best was a fish from a James tributary that went 12 inches. A truly



Rock bass

©Duane Raver



On a trip last June down the South Fork with Christian and his son Caleb, the youngster caught a number of plump redbreasts that fell for ultralight crankbaits. Usually, the fish mauled the crankbait as soon as it landed or after a few cranks of the reel.

My biggest rock bass have all been caught when I was fishing for jumbo size smallmouths. Given their large mouths, overgrown rock bass can easily engulf 6-inch plastic worms and 4-inch plastic crawfish and tubebaits—all classic lures for larger river bronzebacks.

My biggest redbreasts, true behemoths that measured 10 inches in length, have come from the James between Scottsville and Richmond and fell to, of all things, 1/4-ounce buzzbaits. More likely lures include 2-inch grubs and downsized topwater prop baits. Effective long rod pat-



terns for both rock bass and redbreast include damsel and dragonfly imitations and the old standby—the Sneaky Pete popper.

Bluegills are great fun on flyrods, and, frankly, don't worry about matching the hatch with this gamefish. Any dry or wet fly that works for trout will attract gills, and small poppers and imitations of terrestrials will entice them as well. Again,

©Dwight Dyke



©Dwight Dyke

though, don't spend time debating the color schemes and realism of any fly that you plan to toss to these aggressive predators.

Of course, budding anglers especially don't have to be experts with the long rod to bewitch bluegills. Friend Doke Harbison of Roanoke and his two grade-school-age children, Leah and Luke, joined me at a Botetourt County farm pond last June. The duo baited up with portions of nightcrawlers, and the kids caught a number of gills by dunking portions of worms under a red-and-white bobber.

I can think of two major reasons to fish for rock bass, redbreast sunfish and bluegills. All three are fun to catch, especially for kids, and make outstanding tablefare. Quite sincerely, each member of this trio tastes far better than their close relatives, the largemouth, smallmouth and spot-

Pfun Panfishing Pfacts

- Female rock bass will lay on average around 5,000 eggs, but the male guards the nest.
- Rock bass are not native to the James or Shenandoah, among other streams.
- Redbreast sunfish are native to western Virginia's rivers.
- A redbreast may take four or five years to reach 6 inches.
- Bluegills rarely live to be over six to eight years old.
- Bluegills are one of the most introduced panfish in Virginia and elsewhere.
- Copperbellies spawn when the water temperature reaches the mid-60s, one female can lay as many as 35,000 eggs.



©Dwight Dyke

As the warmer months of summer approach, why not plan a trip to one of the many lakes, streams or rivers found in Western Virginia? Anglers who enjoy pursuing sunfish will find that fly fishing is an excellent method to lure fish into biting. Left: A good selection of poppers and streamers, that imitate insects, is all that you need to get their attention.

ted bass. Those are reasons enough to ply Western Virginia's waters for the region's three most popular panfish. □

Bruce Ingram is the author of two books on river fishing and floating: The James River Guide and The New River Guide, both available from Ecopress (800-326-9272) or directly from the author for \$15.00 at P.O. Box 429, Fincastle, VA 24090. He and his family live in Fincastle.

Canoe Rental

Shenandoah River Outfitters can supply current river information and offers guided trips (800-6CANOE2).

Dwarf

What these little fish lack in size, they make up for in their colorful appearance.

by Tim Copeland

Although familiar in outline, the tiny fish in my hand was something different and special. Its shape was that of the abundant bluegill, but its body was the color of old leather with shimmering spots of robins-egg blue. It was a bluespotted sunfish, one of the most colorful inhabitants of Virginia's coastal plain waters.

This species is one of three seldom-noticed dwarf sunfish (genus *Enneacanthus*); the bluespotted, banded, and blackbanded sunfish found in Virginia's waters. You may

never catch one by hook and line but these tiny sunfish are an important and colorful part of Virginia's wildlife. All are small, less than 4 inches maximum length. Dwarf sunfish are compressed and shaped like the other sunfish but have more flowing dorsal and anal fins and a rounded, spoon-like tail. This shape makes them excellent at hovering and making sharp turns—useful maneuvers in the shallows of the calm, weedy waters they prefer. The blackbanded sunfish has distinct vertical black bands. The banded and bluespotted sunfish are hard to distinguish except during spawning season. When on the lookout for mates, the male bluespotted is dark brown with numerous bluish spots, while the banded is greenish-brown with bands still apparent under the light-colored spots. Females, juveniles and non-spawning males of both species have indistinct vertical bands with light spots otherwise. This pattern helps break up the body

outline and makes dwarf sunfish hard to see in vegetation. Scientists consider the dwarf sunfish a primitive genus of the Centrarchid family (sunfish, crappie, black bass).

In some circles, dwarf sunfish are popular as fish for aquaria and water gardens. They adapt readily to aquarium life, although male territoriality limits the number per tank. They help keep mosquitoes down in outdoor water gardens (as they also do in the wild). There is a well-established blackbanded sunfish population in captivity in Europe and southeast Asia and this species is legally available from these sources. However, they are endangered in Virginia, and it is illegal to take them from the wild.

Wild dwarf sunfish are found in backwaters and swamps on the Atlantic and Gulf Coastal Plains—all three are present in Virginia. The bluespotted is the most widespread and occurs throughout Virginia's Coastal Plain and even above the



Bluespotted

Sunfish

Fall Zone in places. The banded and blackbanded have more restricted ranges within the Coastal Plain. In fact, the distribution of the blackbanded is so limited in Virginia, it is considered endangered by the Commonwealth. It may be hard to find a population of dwarf sunfish, but they are often abundant where they do occur.

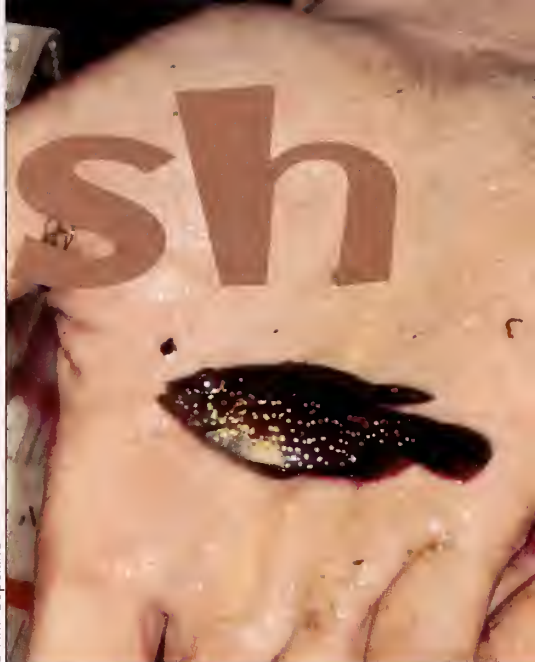
Dwarf sunfish are shy and difficult to observe compared to other sunfish; therefore, much is not known about their habits. We do know that they feed on small crustaceans and insects associated with rooted aquatic plants and seldom stray far from protective cover. Spawning occurs in late spring through mid summer. Like other sunfish, the males hollow out and guard nests; unlike other sunfish, dwarf sunfish nest in vegetation. The eggs are attached to the vegetation that makes up the nest. Because of their habitat needs, they are usually found in swampy areas in soft,

acidic, tea-colored water. This habitat is harsh for many other fish, and dwarf sunfish thrive in their absence. Destruction of beaver ponds, eradication of aquatic vegetation, and introduction of large predators such as bass and pickerel have led to the decline of these tiny fish, especially the blackbanded sunfish. The elusive dwarf sunfish are a valuable and interesting part of our natural heritage, so keep your eye out for these colorful inhabitants of Virginia's waters! □

Tim Copeland is a fisheries biologist with the Fish and Wildlife Sciences at Virginia Tech.

[Top to bottom] Bluespotted sunfish (*Enneacanthus gloriosus*), blackbanded sunfish (*Enneacanthus chaetodon*), and banded sunfish (*Enneacanthus obesus*). Below: Virginia's dwarf sunfish, illustration by Spike Knuth.

©Tim Copeland





WHAT LIES BENEATH... THE SURFACE OF THE SMITH RIVER?

story by Mary Dail
photos by Dwight Dyke

A thin, eerie fog hovers over the surface of the Smith River allowing only root wads and large boulders to slice through its filamentous layers. A brown trout lurks just below the surface as commuters somberly drive to work on the bridge above. None notice the circular ripple made by the trout as it lightly brushes past the water's surface in pursuit of its prey. The water begins to rise as flow increases; the brown trout's favorite feeding spots

Fisheries biologists from the Virginia Department of Game and Inland Fisheries and Virginia Tech join in on a multifaceted study to learn more about one of the best tailwater fisheries in the Old Dominion.

become more difficult to use. The brown trout follows the current downstream and then attempts to hold fast. The water will soon settle once the hydropower dam has generated enough electricity for the day.

We've read about the elusive browns that cruise the waters of the Smith River and we know what flies to use and when, but for the purpose of this article, dive in and submerge

yourself in the biology of the Smith River and its trout fishery.

The current numbers and sizes of brown trout in the river are only a shadow of what they once were in the 1960s and '70s. With these issues in mind, the Virginia Department of Game and Inland Fisheries and Virginia Tech are teaming together to investigate questions raised regarding the lack of large trout and what



Graduate students from Virginia Tech collect samples of aquatic insects, macroinvertebrates and fish from the Smith River to learn more about life below the surface of this unique tailwater stream.

environmental factors may be limiting brown trout in the Smith River. The study area includes the Smith River tailwater located between Philpott Dam and the dam at Martinsville. By definition, tailwater rivers begin just below a dam and are commonly characterized by widely fluctuating flows and temperatures.

If you visit the Smith River today, you will find a scenic, clear river that can be waded during low flows. Upstream of the town of Bassett, the river appears relatively pristine with steep, wooded slopes that offer satisfying backdrops for recreation. Similar to many other rivers, urbaniza-

tion has added clutter to the banks and waters of the Smith River as one progresses downstream. Effluents from human activities and sediments delivered from tributaries modify the chemical and biological characteristics of the water. This has a strong impact on the types of aquatic plants and animals that reside in the river.

Daily flow changes related to power generation at Philpott Dam create a challenging environment for aquatic organisms as well as anglers. Yet without the dam, trout could not exist in the Smith River. Water released from the dam is much colder than water that flowed freely during the pre-dam era and is termed "hypolimnetic" because it originates deep in Philpott Lake. In a stratified or layered reservoir such as Philpott, warmer water accumulates near the surface (the epilimnion) whereas colder, oxygen-depleted water sinks to the bottom (the hypolimnion). This cold water allows trout to survive and reproduce in the Smith River. Temperatures between 40 F and 46 F are optimal for brown trout to spawn and for best egg survival to occur. Temperatures that are warmer than 78 F for extended periods are

lethal to brown trout and growth is curtailed at temperatures over 68 F. Brown trout have established a naturally reproducing or "wild" population in the Smith River due to the daily hypolimnetic releases from Philpott Dam. By contrast, managers of other tailwaters must stock trout to provide fishing opportunities for anglers. These wild browns make the Smith River a unique and valuable fishery.

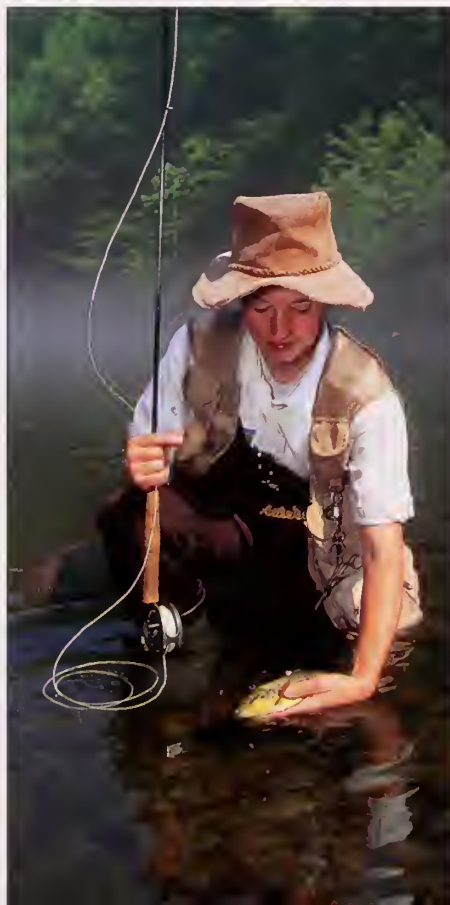
The Smith River did not maintain such consistently low temperatures during its pre-dam era. The fish community resembled a typical warmwater stream like the Roanoke River before the construction of Philpott Dam in the early 1950s. Traces of this pre-dam fish assem-



In the early 1970s, the Smith River, just below the dam, was one of the best trout streams in the state. It was not uncommon to catch brown trout weighing 10 pounds or better.

blage are found in the Smith River near Martinsville where populations of redbreast sunfish, bluegill, smallmouth bass, and an assortment of minnows and darters, including the federally endangered Roanoke logperch, reside.

Brown trout were imported into the United States from Europe for sport fishing in 1883 and introduced into the Smith River shortly after the dam was built. An August, 1958, *Virginia Wildlife* article by John Yeaman, boasted of the quality trout fishing to be found in the Smith River. The fishery for bruiser brown trout in the river peaked in the 1970s when, in summer of 1974, state records for brown trout were broken by fish caught in the Smith River three times





Pre-Dam Smith River

Warmwater species such as red-breast sunfish were common in the Smith River before Philpott Dam was constructed in 1952. Seasonable rainfall in autumn and spring produced dramatic spikes in flows whereas moderate, minimum flows were maintained by a supply of groundwater to the Smith River and its tributary headwaters in the Blue Ridge. The U.S. Army Corps of Engineers built Philpott Dam for flood control and hydro-power generation. Operation of the dam now produces low minimum flows with controlled daily spikes following peak demands for electricity. Cold-water releases from the dam ushered in a new era of trout fishing on the tailwater.

in three weeks! In 1979, the 18 pound, 11 ounce historic state record brown trout was caught. Sadly, trout of this magnificent size cruising waters of the Smith River are a fading memory for most anglers.

Rainbow trout have also been introduced for sport fishing in the Smith River. They are stocked at sizes of 10 to 12 inches and do not appear to reproduce in the river. Many are harvested by fishermen shortly after stocking. Their presence adds to the angling opportunities in the river.

Other inhabitants of the Smith River include aquatic insects. Pick up a rock sometime and flip it over. The world of these tiny insects exists unbeknownst to the average passerby. It is in an angler's best interest to take notice of these aquatic animals because chances are the fish are biting on flies that resemble them. Many insects are found on and under rocks ranging from the size of a baseball to the size of a basketball. This cobble-size substrate is considered desirable habitat for brown trout as well. In the Smith River, the largest number and variety of insects are found a few miles downstream

The prime sections of the Smith River targeted by trout anglers start just below the dam at Philpott Lake and run to Martinsville. The cold waters released through the dam help to support a wide diversity of food sources for trout to feed on.



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HABITAT AT HOME[®]



story and photos
by Carol A. Heiser
illustrations by Spike Knuth

Ready to get outside in the garden and do some planting? Are you a nature-lover who would like to make your yard more attractive to wildlife? Give wildlife a helping hand with Habitat At Home[®]. Your yard can be a mini-sanctuary for birds, butterflies, frogs and other wild creatures when you improve the habitat elements found there. You might plant a shrub border or a ground cover, add a few climbing vines or a perennial bed of native wildflowers, or install a small water feature. A garden for nature can be a quiet retreat for you and your family.



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Black-eyed Susans (*Rudbeckia hirta*) [left] and butterfly-weed (*Asclepias tuberosa*) [right] are good nectar sources for butterflies and can tolerate dry conditions.

There's an effort underway today by conservation-minded individuals to fill in the habitat gaps that exist in and around our highly paved and populated towns and cities. Although we can not turn back and un-build or un-populate suburbia, we can make an effort to restore—if only on a very small scale—some of the habitat features that are being usurped by the construction boom. The natural landscaping movement that is now sweeping the country illustrates a recognition that each of us can be part of a solution.

Your Recipe for Habitat

Every wildlife species has a set of well-defined requirements that must be met in order for individuals within a population to survive and pass on their genes. There must be adequate **space** in which to seek a mate, breed, and successfully feed and rear offspring. There must be adequate **cover** in which to find protection from the elements and to escape from predators. There must be adequate **food** resources available throughout the year to sustain the population when energy demands are greatest, such as for reproduction during spring and for warmth during winter. There must also be sufficient sources of accessible **water**. In a nutshell, wildlife needs some combination of cover, food and water within the space or range that they call home. This "home" is referred to as their *habitat*. Habitat is a place where the primary ingredients come together in some combination or arrangement that is appropriate for the species in question.

Habitat for What?

What is an "appropriate" arrangement? That depends on what we expect the habitat to support. The word "habitat" by itself is rather meaningless unless it is associated with a partic-

ular wildlife species or groups of species that make up a given plant and animal community.

If we're talking about a community of plants that require moist soils and animals that require standing water, then we could be describing a riparian habitat, a wetland habitat, a marsh habitat, or any number of other places where water and wet soils occur. Conversely, if we expect to see a particular species—for example goldfinches—we would envision grasses and flowers in open field habitats that might be adjacent to shrubby woodland borders.

Habitat, therefore, defines not only a place but a unique set of characteristics that make it



especially attractive to a group of plants and animals which are usually associated with each other.

Planning for Wildlife

Knowing that a habitat can be many things to many creatures makes our job of designing a wild garden much easier, because we can be

somewhat selective in choosing various habitat elements for our yard that will attract particular groups of wildlife species.

If we want to see butterflies and moths, for example, then our habitat needs flowering plants that provide nectar for the adults and host plants that will feed their caterpillars. If we enjoy watching woodland-type birds, then our habitat should include groups of shrubs and small to large trees for cover, as well as leaf litter on the ground and convenient sources of water. If our goal is to help salamanders, frogs and other amphibians, then we must provide habitat that contains not only water features but also moist soils shaded by groundcovers and overhanging plant material.

However, we should always remember the fact that *groups* of animals are associated with *groups* of plants in natural environments. For the wildlife gardener, this means that it would be unrealistic to plant a habitat for butterflies and then not expect several bee species and other insects to show up, or to plant a series of berry-producing shrubs for birds and then be surprised if raccoons or opossums amble into the yard. Similarly, a water garden intended for fish and aquatic insects will invariably be visited by herons or other predatory birds and mammals. A rock pile that provides places for chipmunks

A Habitat at Home® can include a pleasing array of flowering plants and small trees, such as in this butterfly garden set against the edge of a woodland. The diversity of plant material is arranged in layers and provides vertical structure, an important feature of a good habitat.

to hide is also a good place for lizards and snakes to sun themselves and hunt for prey.

In a Habitat at Home[®], your intention is to increase the diversity of habitat features so as to increase the diversity of wildlife species that will be found there. To use an old cliché: *if you build it, they will come*. If you don't want them to come, then don't build it!

Wildlife Landscaping 101

There are some basic yet important principles to consider before you begin your habitat garden. Understanding these will enable you to view your yard with a critical eye and see what elements might be missing.

The first of these is *vertical structure* or *vegetative layering*. In most of the natural plant communities found in the East we can see distinct layers of plants. In a pine-oak forest, for example, the top layer would be the canopy of tall oaks and pines overhead; the middle layer or "understory" might consist of mid-size trees like dogwoods and large or small shrubs like serviceberry; and the shortest layer would be comprised of herbaceous plants, which are generally those without woody stems, such as grasses, wildflowers or groundcovers.

What tends to be missing from most typical suburban landscapes is a middle layer of plants

wood thrushes. A crow might stride between the trees, but not a turkey. A toad might hide underneath a porch, but you'd be hard-pressed to see any salamanders or frogs at the bases of the trees.

To rectify these problems requires some thoughtful placement—*interspersal* or mixing—of shrubs, hedges and thickets between the trees, creating islands or mini-habitats that

fruit and deciduous shrubs that produce nectar. As with any gardening, make sure you use the right plant in the right place. A buttonbush which requires moist loamy soils is doomed in dry soils that are heavy with clay and that lack sufficient organic matter to hold moisture. A holly will grow very sparse branches if sequestered under heavy shade, but it will perform handsomely in full sunlight.



A bird garden might include trumpet honeysuckle (*Lonicera sempervirens*) [below left]; its tubular shaped flowers attract hummingbirds. Arrowwood viburnum (*Viburnum dentatum*) [above] and American holly (*Ilex americana*) [above right] provide berries and cover.



Choose Natives When Possible

The availability of native plants in the commercial horticulture trade is a real boon to habitat gardeners, because you can choose plants suited to your site that are also recognizable by local wildlife and that provide many associated benefits. Native plants are those which occur naturally in your area or have occurred there naturally in the past. Native plant species are well-suited to local soils and climate. If you put a native plant in the correct site with the correct growing conditions—that is, in the habitat that the plant would naturally be associated with—then the plant should thrive because it is adapted for that habitat's characteristics. Consequently there should be less need for chemical applications of fertilizers, herbicides and pesticides and, therefore, fewer nutrients or pollutants in the water that runs off your property and into storm drains (a process that inevitably impairs water quality in streams and rivers).

Exotic plants, in contrast, are those which did not evolve here but instead came from some other region or country. The ones from Asia seem to be the most troublesome and most commonly used (notice how many plants at the store are "Japanese this" or "Oriental that"). Whereas the use of native plants contributes to

contain cover as well as water sources. Plant material should be arranged in such a way that cover is near food, food is near water, and so forth.

When thinking about how to improve habitat in your landscape, therefore, you need to ask yourself three questions: 1) what types of wildlife do I want to attract?, 2) what habitat elements are missing from my yard which those wildlife species need?, and 3) what's the best way to arrange those elements and ensure habitat diversity?

When in Doubt, Plant Cover

Food is nice to have, but food is *not* usually the limiting factor for most wildlife species. Rather, it is a lack of adequate cover that generally limits which species can use an area. Therefore, choose and place plant material carefully to increase habitat diversity. For example, if you have a relatively small yard and room enough for only three bushes and a couple of small trees, consider using evergreens that provide



and a herbaceous layer of groundcovers. Tall trees loom over broad expanses of bare lawn, asphalt or other open spaces, lending a "park-like" atmosphere to the neighborhood. However, wildlife diversity on an acre of sod is very low because sod provides virtually no structure and because there is insufficient cover for birds and mammals. The lawn may see a few robins and starlings, but not thrashers, towhees or



the species diversity of an area, exotic plants are often associated with loss of productive habitat. This is because many exotic species can out-compete native ones and may take over an area. The "take-over" might not be readily apparent in your own neighborhood, but it is quite visible when you inspect the plant material that grows in one of your county's woodlands or along a local stream. Japanese honeysuckle, English ivy, privet and autumn olive are a few of the most tenacious.

Adapting Your Gardening Style

The idea of using native plants in the home landscape sometimes conjures images of a jungle in the backyard, as if using plants that occur in the wild will mean that the yard must look wild, too. But this is not necessarily the case. Adapting the principles of vegetative layering with the use of native plants can be done with any garden style, not just the naturalistic type. If your tastes run to the more formal, then hedges can still be trimmed, flower beds can still be arranged with tailored edges, and swaths of attractive, green lawn can still frame large patches of garden.

Moisture-loving plants hide the water feature nestled within this well-constructed, miniature "wetland." The plant material, water, and nearby feeders create a habitat haven for birds, amphibians and other wildlife.

The trick is to look at your yard from the perspective of wildlife. Birds don't really care whether you plant a fenceline with two rows of "neat" shrubs or a thick, tangled mass of briars and small trees; what matters is that the fencerow will provide some type of cover and a place for birds and other wildlife to get from point A to point B. Do not fear that a vine, like trumpet honeysuckle, will run amok across the yard—it can be trained onto an elegant trellis. And flower beds do not have to be a hodgepodge of every hue in the color wheel; they can be planted with a discerning eye towards balance and symmetry.

Sip or Dip: Add Water

Providing water sources in the landscape is crucial to having a balanced wildlife habitat, regardless of what species you're trying to attract. There are many ways to add small water features to your yard; and as for most things, what you choose depends on your pocketbook and on your personal preference for what is attractive.

The most obvious would certainly be the ubiquitous bird bath. Station your bird bath near shrubbery or a small tree; choose a design with a shallow basin.

Of course, there are more than just birds visiting a Habitat at Home®. A salamander would be rather vulnerable shimmying up a bird bath pedestal, and a tree frog might not have enough cover once it's within the basin. While a chipmunk might hop down from a nearby brush pile, a toad would be hard-pressed to jump two feet off the ground. Instead, these types of animals would benefit from a small water feature in the ground.

You can purchase the same basin without the pedestal and put it in a shallow depression in the ground, so that the lip of the basin is flush with the top of the sod. Or use the top of a galvanized metal trash can for the same purpose. Another method would be to line the depression with a plastic liner and surround the edges with small rocks, to simulate a tiny pool. In any case, provide plant material such as ferns or a groundcover nearby for safety from predators.

There are many good books about how to construct a water garden. The simplest ones are those made with a pre-fabricated liner that looks like a bathtub, but you must be sure it is installed completely level in the ground or the resulting uneven water level will be a problem. You can also dig your own shape in the ground and line it with a heavy-duty (30-45 mil) plas-



tic. Other designs are more elaborate and can include waterfalls and simulated streams.

Over time, you will gradually notice organic matter such as leaves and small plant parts accumulate in the bottom of the water garden. This substrate is an excellent “mini-habitat” within the water feature that is occupied by aquatic insects and other organisms; it should be left at the bottom as long as possible to simulate the conditions that would occur in nature. Your overall goal should be to allow the water garden to become a balanced, self-contained system for plants and insects. But remember, wildlife doesn’t care how pretty the water feature looks—they just want a protected place to take a drink or lay their eggs.

What About Mosquitos?

According to the Virginia Department of Health, clean or empty your bird bath, small water feature or any other source of *standing* water once a week to eliminate the likelihood of mosquito larvae development during the breeding season. Since mosquitos breed in quiet, standing water, weekly cleanout is *not* necessary if water is being pumped and circulated through a water feature. As long as water is moving somehow, mosquito use should not be a problem. You can also purchase a “mosquito dunk” made from the bacterium Bt.

Education Programs

Habitat at Home® is an outreach program of the Virginia Department of Game and Inland Fisheries that provides information and education to the public about how to create or improve wildlife habitat around the home. Presentations are available on a limited basis. Contact Carol Heiser, Habitat Education Coordinator at the Richmond office for more details; (804) 367-6989 or e-mail cheiser@dgif.state.va.us. Visit the agency Web site at www.dgif.state.va.us.

BayScaping, a program of the Alliance for the Chesapeake Bay, is a holistic approach to landscaping that promotes water quality, provides habitat for wildlife, stresses the use of native plants, and informs citizens how to reduce their use of mowing, fertilizer and pesticides. Literature and information is available at www.alliancechesbay.org/bayscapes.cfm (or call the Richmond office at (804) 775-0951). □

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The Following is a Partial List of Invasive Exotic Species to Avoid

(See resources listed on page 22)

Oriental Bittersweet (vine)
Japanese Honeysuckle (vine)
Japanese Wisteria (vine)
Porcelain Berry (vine)
Japanese Hops (vine)
Climbing Euonymus (vine)
English Ivy (vine)
Mile-a-Minute (vine)
Kudzu (vine)
Periwinkle (groundcover)
Fiveleaf Akebia (vine)
Japanese Barberry (shrub)
Russian Olive (shrub)
Autumn Olive (shrub)
Winged Euonymus or Winged Burning Bush (shrub)
Privet (shrub)
Bush Honeysuckles (shrub)
Multiflora Rose (shrub)
Japanese Spirea (shrub)
Norway Maple (tree)
Tree-of-Heaven
White Mulberry (tree)
White Cottonwood (tree)
Sweet Cherry (tree)
Garlic Mustard
Spotted Knapweed
Canada Thistle
Bull Thistle
Crown Vetch
Purple Loosestrife
Common Reed

Celastrus orbiculata
Lonicera japonica
Wisteria floribunda
Ampelopsis brevipedunculata
Humulus japonicus
Euonymus fortunei
Hedera helix
Polygonum perfoliatum
Pueraria lobata
Vinca minor
Akebia quinata
Berberis thunbergii
Eleagnus angustifolia
Eleagnus umbellata
Euonymus alatus

Ligustrum obtusifolium
Lonicera species
Rosa multiflora
Spiraea japonica
Acer platanoides
Ailanthus altissima
Morus alba
Populus alba
Prunus avium
Alliaria petiolata
Centaurea maculosa
Cirsium arvense
Cirsium vulgare
Coronilla varia
Lythrum salicaria
Phragmites



Autumn olive (*Eleagnus umbellata*) [above left] is an exotic, double-edged sword. While its fruits are relished by birds, the plants are easily spread and can form dense thickets that block sunlight. Other shrubs and tree species cannot germinate or compete and are effectively excluded, resulting in a loss of native plant diversity. A better choice for a habitat garden would be the native silky dogwood (*Cornus amomum*) [above right], whose berries are equally rivaled.

Native Plants for Your Habitat at Home®

There are so many plant lists "out there" that it can be confusing to know what to choose for your wildlife habitat. The list below is a sampling of native plant species that benefit wildlife. You are bound to find other lists which do not include some of these species, or lists that contain species not on this one. Some plant groups are too large to list more than just a representative sample, such as the oaks or the viburnums. The main points to remember:

- Choose native species when possible or available; avoid invasive exotics.
- Ask for plants by their scientific name, because nursery plants can

have all kinds of common names that may or may not mean the same thing. Bring this list with you to the store.

- Use plant material that is "true" to the species type rather than a cultivar, in order to more closely approximate native plants growing naturally in your community.
- Site the plant in the correct growing conditions; start with a soil test to save yourself time and money.
- Consult a plant manual for more detailed information about flowering times and fruit productivity.

Common Name	Scientific Name	Basic Growing Requirements	Average Size At Maturity	Use by Wildlife
Large Trees				
Pignut Hickory	<i>Carya glabra</i>	Partial to full sun; well-drained	50-75 ft.	Fruit (nuts)
Common Persimmon	<i>Diospyros virginiana</i>	Full sun; wet to well-drained	35-60 ft.	Fruit (fleshy)
American Beech	<i>Fagus grandifolia</i>	Partial to full sun; moist to well-drained	50-100 ft.	Fruit (nuts); sap; buds
American Holly (evergreen)	<i>Ilex americana</i>	Partial to full sun; moist to well-drained	20-40 ft.	Fruit (red berries); cover
Black Walnut	<i>Juglans nigra</i>	Full sun; moist to well-drained	50-75 ft.	Fruit (nuts)
Eastern Redcedar (evergreen)	<i>Juniperus virginiana</i>	Full sun; well-drained to dry; drought tolerant	30-50 ft.	Fruit (blue berries); cover
Blackgum or Black Tupelo	<i>Nyssa sylvatica</i>	Partial to full sun; wet to well-drained	30-60 ft.	Fruit (black berries)
White Pine (evergreen)	<i>Pinus strobus</i>	Partial to full sun; moist to dry	50-80 ft.	Fruit (seeds); sap; cover
Loblolly Pine (evergreen)	<i>Pinus taeda</i>	Full sun; wet to moist	70-90 ft.	Fruit (seeds); sap; cover
Virginia Pine (evergreen)	<i>Pinus virginiana</i>	Full sun; well-drained to dry;	50-80 ft.	Fruit (seeds); needles; cover
Black Cherry	<i>Prunus serotina</i>	Full sun; moist to well-drained	40-60 ft.	Fruit (red berries); sap
White Oak	<i>Quercus alba</i>	Partial to full sun; well-drained	50-90 ft.	Fruit (acorns)
Chestnut Oak	<i>Quercus prinus</i>	Partial to full sun; well-drained	60-70 ft.	Fruit (acorns)
Northern Red Oak	<i>Quercus rubra</i>	Full sun; well-drained	60-75 ft.	Fruit (acorns)
Sassafras	<i>Sassafras albidum</i>	Partial to full sun; moist to well-drained	30-60 ft.	Fruit
Small Flowering Trees				
Downy Serviceberry or Shadblow	<i>Amelanchier arborea</i>	Sun to partial shade; well drained, moist soil	15-60 ft.	Nectar (white flowers in long racemes); fruit-red berries (birds)
Paw-Paw	<i>Asimina triloba</i>	Sun to shade; moist to saturated soil or well-drained soil	15-20 ft.	Fruit (fleshy); leaves-host plant for larvae of zebra swallowtail
Fringe Tree	<i>Chionanthus virginicus</i>	Full sun to shade; wet to well-drained soil	3-15 ft.	Nectar-males have most flowers; fruit-blue berries produced by female (birds and mammals)
Flowering Dogwood	<i>Cornus florida</i>	Shade to partial sun; well-drained soil	15-30 ft.	Fruit-red berries; leaves & twigs
Witch Hazel	<i>Hamamelis virginiana</i>	Partial to full sun; moist to well drained	20-25 ft.	Seeds; twigs
Shrubs				
Common Alder	<i>Alnus serrulata</i>	Sun to shade; high moisture (grows along streambanks)	4-12 ft.	Catkins/ seeds
Red Chokeberry	<i>Aronia arbutifolia</i>	Partial to full sun; moderate to high moisture	6-10 ft.	Fruit (red berries); buds
Beauty Bush or American Beautyberry or French Mulberry	<i>Callicarpa americana</i>	Full shade to full sun (best in at least ½ day sun); dry to moist soil	6-9 ft.	Persistent fruit in winter (purple berries along length of branches)
Button Bush	<i>Cephalanthus occidentalis</i>	Sun to shade; requires moist to saturated soil	3-6 ft.	Nectar; seeds
Sweet Pepperbush	<i>Clethra alnifolia</i>	Looks best in full sun, can tolerate some shade; moist to saturated soil	3-8 ft.	Nectar
Silky Dogwood	<i>Cornus amomum</i>	Partial to full sun; wet to moist soils	6-15 ft.	Fruit (blue berries); twigs
Dwarf Hawthorn	<i>Crataegus uniflora</i>	Best in full sun; good drought tolerance	2-12 ft.	Cover (good for hedgerows and thickets); fruit
October Hawthorn	<i>Crataegus flava</i>	Best in full sun; good drought tolerance	3-20 ft.	Cover (good for hedgerows and thickets)

Common Name	Scientific Name	Basic Growing Requirements	Average Size At Maturity	Use by Wildlife
Deciduous Holly or Possumhaw	<i>Ilex decidua</i>	Partial sun to shade; moderate moisture	3-10 ft.	Persistent winter fruit-red berries; cover
Inkberry (evergreen)	<i>Ilex glabra</i>	Partial shade to full sun; wet to moist	6-8 ft.	Fruit-black berries; cover
Winterberry Holly (deciduous)	<i>Ilex verticillata</i>	Partial to full sun; moderate to high moisture	6-10 ft.	Persistent winter fruit-red berries (females produce fruit, need male plants to pollinate); cover
Yaupon Holly (evergreen)	<i>Ilex vomitoria</i>	Sun to shade	3-20 ft.	Fruit-red berries; cover
Virginia Sweetpire or Virginia Willow	<i>Itea virginica</i>	Shade to full sun; moist to well-drained	3-5 ft.	Nectar
Spicebush	<i>Lindera benzain</i>	Shade to full sun; moderate moisture, well-drained	6-12 ft.	Fruit-red berries; leaves-host plant for larvae of spicebush swallowtail and tiger swallowtail
Southern Wax Myrtle (evergreen)	<i>Myrica cerifera</i>	Partial to full sun; wet to well-drained (Tidewater area)	5-12 ft.	Fruit (berries); cover
Bayberry (deciduous)	<i>Myrica pensylvanica</i>	Partial to full sun; wet to well-drained	5-12 ft.	Fruit (berries)
Swamp Rose	<i>Rosa palustris</i>	Full sun; wet to moist	4-7 ft.	Fruit (berries); buds; cover (forms thickets)
Carolina Rose or Pasture Rose	<i>Rosa carolina</i>	Full sun; well-drained to dry; drought tolerant	3-6 ft.	Fruit (berries); buds; foliage; cover (forms dense thickets)
Highbush Blackberry	<i>Rubus argutus</i>	Partial to full sun; well-drained to dry (tolerates drought)	3-5 ft.	Good cover in thickets; fruit
Flowering Raspberry	<i>Rubus adaratus</i>	Partial to full sun; well-drained to dry	5-6 ft.	Good cover in thickets; fruit
Elderberry or American Elder	<i>Sambucus canadensis</i>	Best in full sun; moist to saturated soil	8-12 ft.	Nectar; fruit-purple berries
Highbush Blueberry	<i>Vaccinium corymbosum</i>	Partial to full sun; wet to well-drained	6-12 ft.	Fruit; twigs; leaves
Arrowwood Viburnum	<i>Viburnum dentatum</i>	Partial to full sun; moist to well-drained	6-10 ft.	Fruit (berries); leaves
Possumhaw Viburnum	<i>Viburnum nudum</i>	Partial to full sun; moist to well-drained	8-15 ft.	Fruit (berries); leaves
Blackhaw or Blackhaw Viburnum or Stagbush	<i>Viburnum prunifolium</i>	Partial to full sun; moist to well-drained	12-15 ft.	Fruit (berries); leaves
American Cranberry Bush	<i>Viburnum trilobum</i>	Partial to full sun; well-drained soil	8-12 ft.	Fruit (berries); leaves
Vines/Ground Cover				
Crossvine (evergreen)	<i>Bignonia capreolata</i>	Full sun to open shade; moderate moisture	Climbing vine (capable of 50 ft.)	Nectar (hummingbirds, butterflies)
Trumpet Vine or Trumpet Creeper	<i>Campsis radicans</i>	Full sun; moderate moisture	Climbing vine (min. 30 ft.)	Nectar (hummingbirds)
Climbing Bittersweet or American Bittersweet	<i>Celastrus scandens</i>	Sun to partial shade; moderate to dry soils	Climbing vine (to 60 ft.)	Fruit (red and yellow berries)
Virgin's Bower	<i>Clematis virginiana</i>	Sun or light shade	Climbing vine (9 ft. length)	Seeds
Climbing Hydrangea	<i>Decumaria barbara</i>	Partial sun to shade; moderate to high moisture	Climbing vine	Nectar
Wintergreen or Teaberry (evergreen)	<i>Gaultheria procumbens</i>	Dappled shade under trees; moist soils	Groundcover (max. 6 in. hgt.)	Fruit (red berries); leaves
Carolina jasmine or Jessamine (evergreen)	<i>Gelsemium sempervirens</i>	Full sun to partial shade; moderate to high moisture	Climbing vine (to 40 ft.)	Nectar
Trumpet Honeysuckle or Coral Honeysuckle (semi-evergreen)	<i>Lanicea sempervirens</i>	Partial to full sun; moderate moisture	Climbing vine/ shrubby	Nectar (hummingbirds, butterflies); fruit (red berries)
Partridgeberry or Checkerberry or Twinberry (evergreen)	<i>Mitchella repens</i>	Dappled shade under evergreen or deciduous trees; moist soils	Groundcover/ creeping vine (4-6 inches)	Fruit (red berries)
Virginia Creeper	<i>Parthenocissus quinquefolia</i>	Partial to full sun; moderate moisture	Climbing vine (to 100 ft.)	Fruit (purple berries)
Muscadine Grape	<i>Vitis rotundifolia</i>	Full sun to partial shade; well-drained to sandy soil	Climbing vine (to 60 ft.)	Fruit (purple grapes)
Atlantic Wisteria or American Wisteria	<i>Wisteria frutescens</i>	Full sun; moist to wet soil, well-drained	Climbing vine (3-4 ft.)	Nectar

Common Name	Scientific Name	Basic Growing Requirements	Average Size At Maturity	Use by Wildlife
Perennial Flowers				
Butterflyweed	<i>Asclepias tuberosa</i>	Full sun; well-drained to dry soil (drought tolerant)	1-2 ft.	Nectar
Common Milkweed	<i>Asclepias syriaco</i>	Full sun; well-drained to dry soil (drought tolerant)	2-5 ft.	Nectar; leaves-host plant for monarch butterfly larvae
Swamp Milkweed	<i>Asclepias incarnato</i>	Partial to full sun; wet to moist	2-4 ft.	Nectar
New England Aster	<i>Aster novae-angliae</i>	Partial to full sun; moderate to wet	2-5 ft.	Nectar; seeds; leaves
Smooth Blue Aster	<i>Aster loevis</i>	Partial to full sun; low to moderate moisture	2-5 ft.	Nectar; seeds; leaves
Lance-leaved Coreopsis	<i>Coreopsis lanceolata</i>	Full sun; moist to well-drained	2-3 ft.	Nectar
Threadleaf Coreopsis or Whorled Coreopsis	<i>Coreopsis verticillata</i>	Full sun; moist to dry	1-3 ft.	Nectar
Purple Coneflower	<i>Echinacea purpurea</i>	Full sun; moist to well-drained	3-4 ft.	Nectar; seeds
Mistflower or Hardy Ageratum	<i>Eupatorium caelestinum</i>	Full sun to shade; moderate moisture	3-4 ft.	Nectar
Boneset	<i>Eupatorium perfoliatum</i>	Partial to full sun; wet to moist	3-5 ft.	Nectar
Joe Pye Weed	<i>Eupatorium purpureum</i>	Partial to full sun; wet to moist	5-10 ft.	Nectar
Sneezeweed	<i>Helenium autumnale</i>	Partial to full sun; moderate moisture	4-6 ft.	Nectar
Narrow Leaved Sunflower	<i>Helianthus angustifolius</i>	Partial to full sun; moist to well-drained	2-5 ft.	Nectar; seeds
Blazing Star (or Spiked or Dense Blazing Star)	<i>Liatris spicata</i>	Partial to full sun; wet to well-drained	2-5 ft.	Nectar
Cardinal Flower	<i>Lobelia cardinalis</i>	Partial to full sun; wet to moist soil	2-3 ft.	Nectar (hummingbirds, butterflies)
Great Blue Lobelia	<i>Lobelia siphilitica</i>	Full sun; prefers moist soil but tolerates dry	1-2 ft.	Nectar
Bee Balm	<i>Monarda didyma</i>	Full sun to partial shade; moist to well-drained	2-4 ft.	Nectar (hummingbirds, butterflies)
Wild Bergamot	<i>Monarda fistulosa</i>	Partial to full sun; moist to well-drained	2-4 ft.	Nectar (hummingbirds, butterflies)
Smooth Beardtongue	<i>Penstemon loevigotus</i>	Partial sun; moist soil	1-2 ft.	Nectar
Woodland Phlox, Wild Blue Phlox, or Summer Phlox	<i>Phlox divaricata</i>	Partial to full sun; moist to dry	½-1 ½ ft.	Nectar (hummingbirds, butterflies)
Fall Phlox or Garden Phlox	<i>Phlox paniculata</i>	Partial to full sun; wet to moist	2-7 ft.	Nectar (hummingbirds, butterflies)
Orange or Early Coneflower	<i>Rudbeckia fulgida</i>	Full sun, drought tolerant	1-2 ft.	Nectar
Black-eyed Susan	<i>Rudbeckia hirta</i>	Partial to full sun; moist to well-drained	2-3 ft.	Nectar
Three-lobed Coneflower	<i>Rudbeckia triloba</i>	Partial to full sun; moist to well-drained	2-5 ft.	Nectar
Green or Cut-leaved Coneflower	<i>Rudbeckia laciniata</i>	Partial to full sun; wet to moist	2-8 ft.	Nectar
Rough or Rough-leaved Goldenrod	<i>Solidago rugosa</i>	Partial to full sun; moderate moisture	3-5 ft.	Nectar
Seaside Goldenrod	<i>Solidago sempervirens</i>	Full sun; moist soil (native of coast but adaptable to Piedmont)	2-5 ft.	Nectar
New York Ironweed	<i>Vernonia noveboracensis</i>	Full sun to light shade; moderately moist	Up to 7 ft.	Nectar

Educational Resources

The following can provide additional information:

Native Plants for Conservation, Restoration & Landscaping: Division of Natural Heritage, Department of Conservation and Recreation (www.dcr.state.va.us/dnh/native.htm); phone (804) 371-2708.

Native Wildflowers and Grasses of the Northeastern U.S.: U.S. Fish & Wildlife Service, Chesapeake Bay Field Office (www.fws.gov/r5cbo/nativelist.htm) OR Native Plants for Wildlife Habitat [call (410) 573-4500]

Beneficial Plants for BioScaping in the Chesapeake Bay Region: Alliance for the Chesapeake Bay (www.acb-online.org/ and do a keyword search for BayScapes); phone (804) 775-0951.

Invasive Alien Plant Species in Virginia: Va. Native Plant Society (www.vnps.org/invasive.html), or contact Va. State Arboretum at (540) 837-1758 where the Society is based.

Landscaping for Wildlife, by Carroll L. Henderson, c. 1987 Minnesota Department of Natural Resources, St. Paul, MN; 149 pp.

Backyard Habitat www.nwf.org (National Wildlife Federation)

Texas Wildscapes: Gardening for Wildlife, by Noreen Damude and Kelly Conrad Bender, c. 1999, Texas Parks and Wildlife Press, Austin TX; 387 pp.

Landscaping with Native Plants: www.epa.gov/glnpo/greenacres/native-plants/index.html (hosted by U.S. Environmental Protection Agency)

Wild Ones Handbook Online: www.epa.gov/greenacres/wildones/ (contains several articles)

Gardening With Native Wildflowers, by Samuel B. Jones, Jr. and Leonard E. Foote, c. 1990, Timber Press, Portland OR; 195 pp.

Audubon Guide to a Healthy Yard and Beyond: www.audubon.org/bird/pesticide.html.

Better Backyard: A Citizen's Resource Guide to Beneficial Landscaping and Habitat Restoration in the Chesapeake Bay Watershed: www.chesapeakebay.net/search/pubs.htm (a 61-page, downloadable booklet from the Chesapeake Bay Program)

Mosquito Information/West Nile Virus www.vdh.state.va.us (Virginia Department of Health)

Post-Dam Smith River

During the 1970s, Philpott Reservoir was at peak productivity. This had a positive effect on aquatic life in the Smith River downstream of the dam, supporting rapid fish growth. The reservoir provided a steady influx of alewife that spilled through the turbines providing food for trout. During this time reports of brown trout over 10 pounds were not uncommon. Anglers enthusiastically praised the Smith River, comparing it to blue ribbon trout streams in California, Michigan and Yellowstone National Park. Harmon Harms, an avid Smith River angler, even stated that the "Smith River below Philpott Dam is undoubtedly the best trout stream in the U.S." (*Virginia Wildlife* article by Bill Cochran, August, 1975).

The Smith River Today

Today, the Smith River is a resource, still prized by anglers, that supports elements of the local economy and benefits students and teachers. "River School," a hands-on summer course for seventh and eighth graders at Bassett Middle School, utilized the river for projects related to science, math and art. Instructor Ron Shealer spearheads the effort, believing that "the Smith is a living laboratory right here on our doorstep. Through introduction to this fantastic resource, students realize the past, present and future significance of the river and why we need to keep it clean and alive." An analysis by Virginia Tech graduate John Hartwig in 1998 concluded that doubling an angler's chances of catching a large brown trout would more than double the net economic value of the Smith River fishery. The Department and Virginia Tech are launching a detailed study aimed at improving trout fishing in the river.



from the dam where suitable rock substrates are abundant. Upstream near the dam, high flows have scoured the stream bottom and eliminated much of the habitat used by insects. In general, only large boulders and bedrock withstand these high flows. Aquatic insects also utilize riverweed, a species of aquatic plant found further downstream. Steve Hiner, an avid Smith River angler and aquatic entomology instructor at Virginia Tech, comments, "Most tailwaters have a dominant species of aquatic insect... The Smith River has a good diversity of macroinvertebrates, but there just aren't great numbers of any single group." A brown trout's diet may include several species of aquatic insects. However, with few aquatic insects overall, the prey base for brown trout may be limited. Incidentally, several different types of insects are present in the Smith River in low numbers, including two rare species of mayflies, midges, hellgrammites and caddis flies.

It is indeed a different lifestyle for organisms living in a tailwater stream. Flow in the Smith River increases from 50 to 1400 cubic feet per second (cfs) causing the river to rise rapidly by about 4 feet on a daily basis. Naturally, these dramatic changes will affect aquatic organisms in the river. All aspects of life are altered by the presence of Philpott Dam and the releases needed for power generation. Fish reproduction, growth and feeding habits depend on a relatively narrow range of temperatures, substrate and flow regimes and the same is true of aquatic insects. The life cycles of many aquatic animals have evolved over time for stream conditions that are sometimes harsh and seasonably variable; however, the completion of their life cycles depends on some degree of predictability.

The issues raised concerning brown trout in the Smith River not only affect anglers and biologists, but also local citizens, river guides, shop owners, students and others. Local anglers have re-established the Smith River Chapter of Trout Unlim-



Changes in water flow in the Smith River, which is needed for power generation, greatly affects the aquatic life within the river. Biologists hope that by understanding these changes they will be able to better manage the fishery. This will not only help to increase the water quality of the river, but will attract anglers from around the state and help to boost the local economy.



ited (TU) and taken an active role in supporting the efforts of the Department and Virginia Tech. Current TU President, Lee Higginbotham, and other members assist with sampling and have organized cleanups on the river. The Smith River Environmen-

Working to improve the future of the Smith River has become a community effort that involves not only fisheries biologists, but local citizens, school students and groups like Trout Unlimited.

tal School at Bassett Middle School, spearheaded by instructor Ron Shealer, was created in order to utilize the river as a learning tool for rising eighth graders in Henry County. By developing a better understanding of the biology of the Smith River and increasing community involvement, we are closer to addressing the fishery issues at hand and improving the quality of the river as a whole. Don Orth, Professor and Department Head of Virginia Tech's Department of Fisheries and Wildlife Sciences, is leading the multifaceted study at Virginia Tech. He firmly believes "tailwaters represent one of the great challenges for ecosystem management. Today we can apply advances in fisheries science and hydrology to fine-tune the tailwater operations to enhance ecosystem benefits." So be on the lookout for a group of Hokies and Department personnel wading in the Smith River, and bear in mind that they are on a quest to answer important questions raised by anglers and biologists alike. □



Mary Dail is a water monitoring specialist with the Virginia Department of Environmental Quality in Roanoke, and enjoys hiking and backpacking in Virginia's wilderness. She holds a bachelor's degree in Fisheries Science from Virginia Tech and worked on the Smith River Project from January to May 2000.

Tomorrow's



Over 350 years ago, Izaak Walton said "As no man is born an artist, so no man is born an angler." We must teach our young boys and girls to fish so that they may learn to love the outdoors and all its creatures as do we. By respecting nature and its gifts, they earn and learn their own self-respect.

Time spent on the water is never lost; and time spent fishing with a child is a precious gift to yourself, the children, and the future.

Over 150 years ago, Ralph Waldo Emerson said "Make the most of yourself, for that is all there is of you." Taking a child fishing is a good start. □

Angler

photo essay by King Montgomery



"Young anglers love new rivers the way they love the rest of their lives. Time doesn't seem to be of the essence and somewhere in the system is what they are looking for."

Thomas McGuane



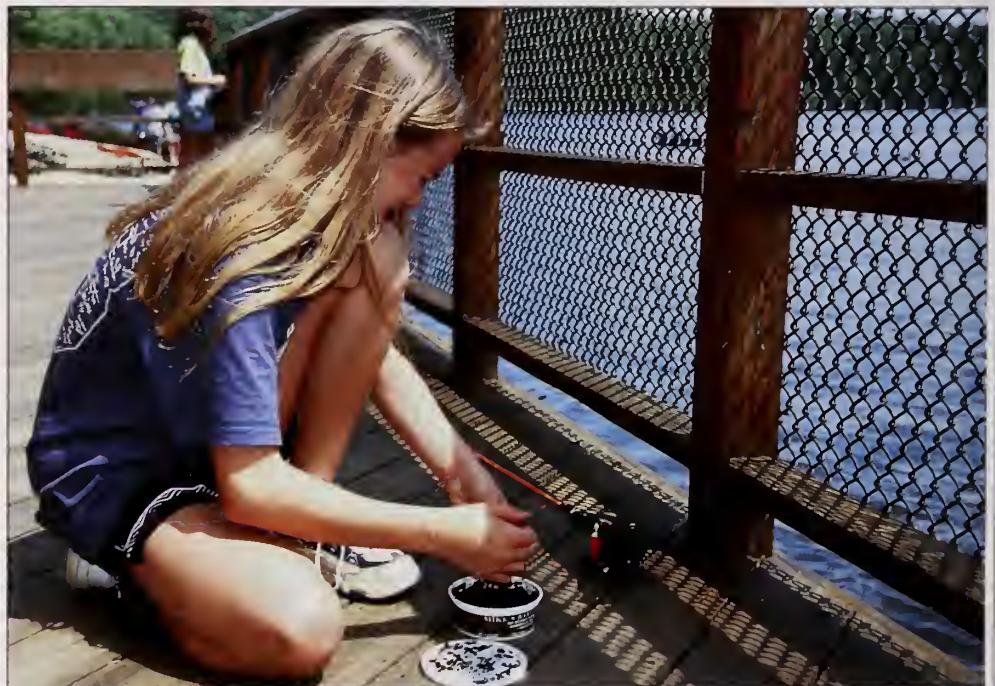
"Fishing is a quest for knowledge and wonder as much as a pursuit of fish; it is as much an acquaintance with beavers, dippers, and other fishermen as it is the challenge of catching trout."

Paul Schullery



"No angler merely watches nature in a passive way. He enters into its very existence."

John Bailey





"There comes a time in every man's life when he is either going to go fishing or do something worse."

Havilah Babcock

King Montgomery is a nationally - known, award-winning outdoor writer and photographer who lives in Burke, Va. He is a frequent contributor to Virginia Wildlife.





Journal

VDGIF 2003 Calendar of Events

June 6-8: *Free Freshwater Fishing Days.* For information call (804) 367-1147.

June 28: *Family Sea Kayaking Day,* Chickahominy Lake, near Richmond, Va. For information call (804) 367-1147.

August 2-3: *The Mother and Daughter Outdoors,* Holiday Lake 4-H Educational Center, Appomattox, Va. For information call (804) 367-1147.

September 7-10: *Decoy Carving Workshop,* Holiday Lake 4-H Educational Center, Appomattox, Va. Learn how to carve your own decoy, carving experience not needed. Tools, materials and instruction will be provided. For information call: (434) 248-5444 or www.ext.vt.edu/resources/4h/holiday/adultprograms.html.

September 13-14: *The Virginia Outdoors Weekend,* Westmoreland State Park, Montross, Va. For information call (804) 367-1147. □

Virginia Game Warden of the Year Announced

by Julia Dixon Smith

The Virginia Department of Game and Inland Fisheries is proud to announce the Game Warden of the Year for 2003 is Sergeant Christopher C. Thomas. The honor is the highest tribute presented by the agency to a Virginia Game Warden. A peer review committee comprised of past recipients of the award selects the recipient from a pool of nominees from across the state.

Chris Thomas joined the Depart-

ment in 1988 and was assigned to the City of Suffolk. He was next assigned to Buchanan County, and then moved to Halifax County where he has worked the majority of his career. Thomas was promoted to the rank of Sergeant in January 2002. He currently oversees activities in Appomattox and Campbell counties and the City of Lynchburg. This area includes Leesville Lake as well as the James and Appomattox rivers.

Department Director Bill Woodfin said of Sgt. Thomas, "Chris has demonstrated a positive attitude in rendering law enforcement service and is dedicated to providing excellent programs for civic and youth groups." The many programs he has coordinated include a Kid's Fishing Day in partnership with Wal-Mart, and at the request of the Halifax Police Department, a Youth Gun Safety Program for elementary school students as part of a Risk Management Program. In addition, he has helped organize a local chapter of the National Wild Turkey Federation and a local chapter of the Bass Anglers Sportsmen Society.

Thomas is a Certified Boating Safety Instructor, a Certified PWC Safety Instructor, and is a Certified Department of Criminal Justice Services Instructor. He is a valued instructor of the Department's Boat Training Cadre involved in the training of new game warden recruits in the basic academy and training his peers during game warden in-service training. He has also taught Marine Theft Investigations through the Department of Criminal Justice Services to local police officers during their in-service training. Other game wardens in the region frequently call

upon Sgt. Chris Thomas because of his extensive knowledge and training in the area of boat accident investigation and reconstruction. Thomas also volunteers for boat work on Smith Mountain Lake and Buggs Island Lake during periods of in-



Left to right: Colonel Herb Foster, Sergeant Christopher Thomas, and William L. Woodfin, Jr., Director, Virginia Department of Game and Inland Fisheries. Photo by Lee Walker.

creased traffic or special events. His special training includes the Underwriter's Laboratory Boat Accident Investigation and Reconstruction School Course and Advanced Course, and Professional Association of Dive Instructors Open Water SCUBA Diver Course and Advanced Course. He has also attended EMS First Responder School and Marine Theft Investigations School, among others. Sgt. Thomas maintains an exemplary reputation within the law enforcement community and in his neighborhood. He has earned the distinction of being named the Virginia Department of Game and Inland Fisheries Game Warden of the Year 2003. □

Wild Backyard

story and photos by Marlene A. Condon



Bird (and Toad) Baths

All living things need water to survive. Thus it is very important that you provide a source of this essential liquid in your backyard habitat.

The easiest way to accomplish this is to place a shallow pan of water on the ground. If it is less than two inches deep, birds will bathe as well as drink from it.

Birds must keep their feathers clean to prevent matting that would interfere with flying. These avian creatures also need clean feathers in order to fluff them up during cold weather to provide insulation.

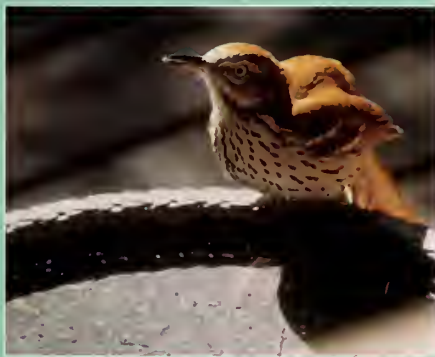
ground is to provide a place for toads to get a drink. Toads absorb



A male northern cardinal enjoys a bath in a shallow pan of water kept unfrozen by a light bulb inside a flow-erpot.

of the soil to make a shallow trough that is big enough for a toad to fit down into. Wet the trough and cover it with a board a bit shorter than the trough's length so that a toad can enter the trough to get under the board. Be sure the trough is exposed at both ends of the board so the toad has a chance to escape if a predator (such as a snake) enters. Check the area every day and add moisture as necessary.

Another way to provide water is to put in a small artificial pond. The beauty of providing water in this manner is that you are creating new



A brown thrasher that has not yet migrated south gets a drink in the low sun of an October day.



A pair of Carolina wrens stop for a drink on a cold January day from a pan of water.



A toad gets a drink by immersing itself in the wet soil of a pot of impatiens cuttings where it can absorb water through its skin.

Be sure to change the water every day in bird baths and scrub the bath down at least once a week with a sponge or brush and soap. Rinse it thoroughly and refill with fresh water.

Another very good reason to place a shallow pan of water on the

water through their skin rather than slurping it up with their tongues. If you spot a toad resting in your "bird" bath, it is actually drinking, not bathing!

Toads will also make use of loose wet soil for this purpose. Dig up a short "runway" and remove enough

habitat that can support many more animals in your yard. Ponds even as small as 2 by 3 feet will bring in newts, salamanders, frogs and water-inhabiting insects (such as water striders, dragonflies and damselflies) that you would not otherwise get to see. ■



On The Water

by Jim Crosby

Boat Insurance ???

One of the more confusing subjects one has to deal with is insurance, and it is no less a mystery with boat insurance.

Nine times out of ten, if you ask the average adult what their boat, car, home or mortgage insurance covers, they will answer, "I'd have to check with my agent," or "I'll have to read my policy."

Most people buy insurance by asking any convenient agent, "What do I need and how much will it cost?" That approach can cause you grief when it comes to recovering a loss.

It's important to know that an insurance agent represents the insurance company, and can become an adversary during your attempt to recover damages from a loss. I am also quick to say that insurance agents, as a group, are honorable members of the business community, licensed and regulated by the Virginia Bureau of Insurance to protect your interests.

According to BoatU.S., "Buying boat insurance can be challenging for any boater. That's because unlike auto or home insurance, boat insurance policies aren't standardized—coverage can vary widely for the same boat depending on who sold the policy and how well informed a buyer you are. But the smart boater can make the right insurance choice with these "Top Five Tips" from BoatU.S., the nation's largest recreational boat owners association:

#5 Know thy insurer: Boat insurance can be "added on" to a homeowner's policy, purchased from an independent insurance agent or directly from a marine insurance specialist. Buying a policy through a reputable agent or directly from a marine insurer specialist is the best way to go. "Adding on" to your homeowner's

policy may seem to work just fine, but when there's a claim you will appreciate a company that knows more about boats than homes. Homeowner's policies often limit or don't provide marine related coverage like salvage recovery.

Ask experienced boating friends for their insurance recommendations and check on the "carrier,"—the actual company that's providing you coverage—at www.ambest.com/ratings.

AM Best ratings are the industry's benchmark for assessing an insurer's financial strength—look for an "A" rating (excellent) or better. The Virginia State Corporation Commission's Bureau of Insurance is also a good bet and can be found online at www.state.va.us/scc/division/boi/.

#4 Agreed Value vs. Actual Cash Value: These are the two main choices for boat insurance and depreciation is what sets them apart.

An "Agreed Value" policy costs more but it pays more—it will cover the stated value of the policy in the event of a total loss. For example, a total loss on a \$50,000 agreed value policy would pay you \$50,000. More importantly, a partial loss of an Agreed Value policy replaces most items on a "new for old" basis—with little or no depreciation, depending on the carrier. Hence, a claim for a stolen four-year-old GPS would get you a new, comparable replacement GPS.

"Actual Cash Value" policies cost less but only pay up to the actual cash value at the time of the boat or property loss—depreciation is factored in on all losses.

#3 Know the salvage truth: If you have chosen an "Agreed Value" policy, stay away from those that limit salvage coverage—that's the amount that may be paid to save your boat

from peril and bring it safely to a repair yard. You want a policy that provides salvage coverage up to the same amount as the boat's Agreed Value, and does not subtract these dollars, or the policy's deductible, from the total amount available to fix the damage. For example, a \$50,000 agreed value policy should have \$50,000 available to salvage the boat from the bottom of the ocean and then pay up to \$50,000 for repairs. Otherwise, you could end up short when replacing or repairing the boat because you may have to use some of your repair funds to pay off salvage costs first. Boats added to a homeowner's policy most often run this risk.

Some policies also have "hurricane deductibles"—a significantly higher deductible for salvage and/or repairs related to named storms or hurricanes. Be sure that this dollar amount is acceptable to you, otherwise you could end up short again.

#2 Speak to me in a language I understand: Don't treat boat insurance like other insurance. Make sure you understand exactly the coverage you are getting as well as what's not covered. Always ask for an explanation in laymen's terms.

#1 One size doesn't fit all: Have an old, trusty, paid-off sailboat? Spanking new (and highly leveraged) 36' express cruiser? Slick and fast bass boat? Personal watercraft? Each has its own insurance requirements.

Do you need hurricane haul-out assistance? Fuel spill coverage? Planning a trip a long way from home? A good insurer will walk you through a list of questions so you won't have to guess the answers when something unexpected happens. □

RECIPES

by Joan Cone

Bream on the Table

Rather than frying whole bream and facing many small bones, you can use a very sharp knife to fillet the larger sunfish. Do not scale before filleting. Scaling makes skinning impossible. Your fillets run from head to tail above and behind the rib cage. After skinning, these fillets will be quite thin, boneless and delicious.

Menu

Cheese Bites

Baked Sunfish Fillets

Krispy Hash Browns

Microwave Asparagus

Berries And Cream Pound Cake

Cheese Bites

20 table wafer crackers

1 package (10 ounces) extra sharp Cheddar cheese, thinly sliced

20 kiwi slices

¼ cup orange marmalade

Top crackers with cheese slices, fruit and marmalade.

Baked Sunfish Fillets

1½ to 2 pounds bream or other panfish fillets

1 cup chopped celery

¼ cup minced parsley

½ cup white table wine

½ cup fine bread crumbs

Salt, pepper and cayenne to taste

1 cup sliced mushrooms

¼ teaspoon dried dill

5 tablespoons butter or margarine

Place celery and parsley on the bottom of a greased baking dish. Lay the fillets on top of vegetables. Pour the wine over the fillets. Sprinkle with bread crumbs, salt, pepper and cayenne. Arrange mushrooms

on top, dot with butter and dried dill. Bake uncovered in a preheated 500° F. oven for about 10 minutes or until fish flakes, basting once with pan juices. Serves 4.

Krispy Hash Browns

2 pounds russet potatoes

2 tablespoons butter or margarine

2 tablespoons vegetable oil

Hot pepper sauce to taste

Salt and freshly ground pepper to taste

Peel and coarsely grate potatoes and set aside in a bowl. In a large skillet, heat butter, oil and hot pepper sauce on medium heat. When fat is almost smoking, add potatoes, mash them down a little and then leave them alone for about 5 minutes. After the potatoes have had a chance to get crispy and golden on the bottom, break them up some and flip them over to crisp the other side. Sprinkle with salt and pepper to taste. Check to see if the potatoes are tender in the center by cutting them with side of fork. Serve immediately. Serves 4

Microwave Asparagus

1 regular size oven bag, (10" x 16")

1 tablespoon flour

¼ cup water

1 or 2 cloves garlic, minced

2 pounds fresh asparagus spears

1 medium red bell pepper, cut in strips

2 tablespoons butter or margarine

Shake flour in oven bag and place in a 13 x 9 x 2-inch microwave-safe baking dish. Add water and garlic to oven bag. Add asparagus and red pepper. Arrange ingredients in an even layer in oven bag. Dot with but-

ter. Close bag with nylon tie and cut six ½-inch slits in top. Microwave on HIGH power for 8 to 10 minutes or until asparagus is tender. Stir before serving. Makes 6 servings.

Berries and Cream Pound Cake

1 cup sour cream

¼ cup firmly packed light brown sugar

2 cups strawberries, sliced

¼ cup strawberry preserves

1 cup blueberries

6 slices (1 inch thick) pound cake

Mix sour cream and sugar. Refrigerate. Toss strawberries and preserves. Let stand at room temperature ½ hour. Spoon sour cream mixture over each pound cake slice. Top with strawberry mixture and blueberries. Serve immediately. Serves 6.





story and illustration
by Spike Knuth

Naturally Wild



Prothonotary Warbler *Protonotaria citrea*

The prothonotary warbler is a bird found in flooded bottomlands, wooded, swampy or marshy shorelines, and along quiet lakes, ponds and rivers. One of its other names is "golden swamp warbler." The name "prothonotary" comes from the title of an old English court or religious official; a person who wore golden yellow robes, called a "protonotarius."

The male has a bright golden head and breast, an olive back, blue-gray wings and white under tail coverts. Females are similar, but generally duller with less yellow coloring. These warblers measure about 5 1/2 inches. Their song is made up of slurred, ascending notes—described as—"zweet, zweet, zweet"—very loud for such a small bird. Often they are mistaken for goldfinches.

This is the only eastern warbler that nests in tree cavities, choosing rotted out holes along water or even over it. Sometimes they'll nest in the nooks and crannies of man-made structures, old duck blinds, old boathouses, and piers. They will nest in houses specifically designed for them or in gourds, and mounted near or over water. Grasses, lined heavily with mosses are used in the nest construction. Five to seven creamy white eggs, heavily marked with brown or purple are laid.

Prothonotaries feed in low shrubs, flood debris, and fallen timber at the edges of or around water on mainly small insects. They begin their southerly migrations as early as late July and early August.

Dismal Swamp, Newport News City Park, along tidal rivers like the James, Pamunkey, Mattaponi, Nottoway, Blackwater, and Dragon Run, and numerous other lakes and rivers with wooded shores and swamps of southeastern Virginia are good places to see the "golden swamp warbler." □



Grey

Navy

Tan

Teal

Black

Item # VV-44

Teal

Tan

Item # VV-45

Virginia Wildlife T-Shirts

Keep your cool this summer with a new *Virginia Wildlife* T-shirt. Each shirt is 100% cotton and embroidered with the *Virginia Wildlife* logo, and largemouth bass or white-tailed deer. Please specify size, M, L, XL, XXL and color, Grey, Navy, Tan, Teal, or Black when ordering.

Largemouth Bass - Item # VV-44 White-tailed Deer - Item # VV-45

\$12.95

Item # VW-44

Largemouth Bass – Item # VW-44

White-tailed Deer – Item # VW-45

Three Virginia Wildlife caps are displayed. On the left is a camouflage cap with 'VIRGINIA WILDLIFE' printed in white. In the center is an orange cap with 'VIRGINIA WILDLIFE' printed in black. On the right is another camouflage cap with 'VIRGINIA WILDLIFE' printed in black. Below the caps is the text 'Item #VW-43'.

Item #VW-41

Item # VW-42

Zip

Outdoor Education Program presents a

Mother & Daughter Outdoors

August 1-3,
2003



This workshop is designed primarily for females. It is an excellent opportunity for females 9 years of age and above to learn the outdoor skills usually associated with hunting and fishing, but useful in a variety of outdoor pursuits.

This workshop is for you if:

- You would like to get your family involved in outdoor activities and need a place to start.
- You have never tried outdoor activities but have hoped for an opportunity to learn.
- You are a beginner who hopes to improve your skills.
- You are looking for camaraderie of like-minded individuals.

All of our courses focus on outdoor skills using hands-on instructional techniques. Our outdoor skills courses include outdoor cooking, fly fishing, wild edibles, introduction to firearms, skeet shooting, archery, high ropes

course, climbing wall, map and compass, stream ecology, mountain biking, and many more.

This year's event will be held at Holiday Lake 4-H Educational Center near Appomattox, Va. Registration fee is \$80 per person, which includes meals, lodging, course instruction, use of equipment, and evening events. Registration deadline is June 26, 2003, at 5:00 p.m.

For more information visit our Web site www.dgif.state.va.us for a listing of events with links to registration forms for downloading. Information can also be obtained by calling the Outdoor Education Office at (804) 367-1147 or e-mailing kholson@dgif.state.va.us.

Virginia Wildlife Magazine subscription calls only 1-800-710-9369
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Visit our Web site at www.dgif.state.va.us